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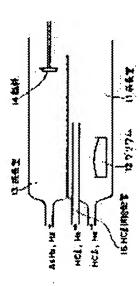
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## (54) SELECTIVE VAPOR-PHASE EPITAXY OF III-V COMPOUND SEMICONDUCTOR

## (57)Abstract:

PURPOSE: To realize a monomolecular vapor growth on a substrate having openings with different widths by performing altenately a process of supplying a group III element material and hydrogen chloride simultaneously and a process of supplying a group V element material.

CONSTITUTION: A substrate sample 14 having a mask of SiO2 partially opened is put within a growing chamber 13 and is heated to a predetermined temperature. Then, HCl is supplied over Ga 12 in a growing chamber 11 and GaCl thus produced is supplied together with HCl from a supply tube 18 so that a mixed atmosphere is established within the growing region. The sample 14 is transferred to the growing chamber 11 and exposed to the mixed atmosphere for a predetermined period of time. Then, the sample 14 is returned to the chamber 13 and AsH3 is supplied to form a GaAs layer in the openings. Thereafter, the chamber 13 is purged of AsH3. These procedures are repeated to grow the GaAs layer. In this manner, thickness per ALE cycle can be controlled by a unit of monomolecular layer in the selective growth on the substrate having openings with different widths.



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